

User Interactive Guided Search Design Environment, Phase I

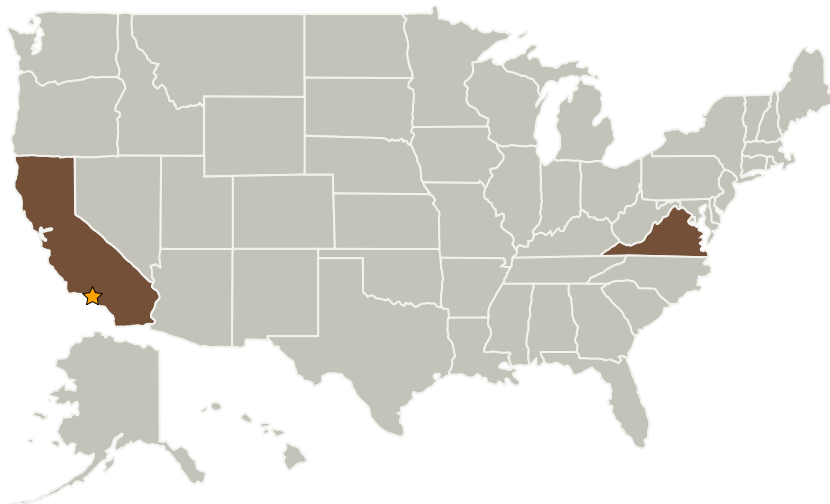
Completed Technology Project (2005 - 2005)



Project Introduction

Phoenix Integration's vision is to create an intuitive human-in-the-loop engineering design environment called Guided Search that leverages recent advances in multi-dimensional visualization techniques, state-of-the-art optimization algorithms, and parallel processing technology. The proposed environment will feature an ongoing two-way interaction between the engineer and an optimization algorithm. The guided search environment will utilize advanced multidimensional graphical displays to suggest promising designs to the engineer, while the engineer will have the ability to accept/reject these designs, suggest different/modified designs, or to reformulate the design problem on-the fly. The guided search environment will be fundamentally different from conventional "black box" approaches to optimization in that the engineer will be an integral part of the optimization process, with the ability to inject his/her knowledge and intuition into the process at any time, thus improving the efficiency of the design process and increasing confidence in the final results. The Guided Search environment will be capable of exercising full-phase, full-breadth mission and system models in a variety of design environments, trade studies, system and investment analysis efforts, and program and technology planning activities. As such, it will be a critical link in achieving NASA's model-based systems engineering goals.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Phoenix Integration	Supporting Organization	Industry	Blacksburg, Virginia

Primary U.S. Work Locations

California	Virginia
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Scott A Ragon

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.5 Mission Architecture, Systems Analysis and Concept Development
 - └ TX11.5.2 Tools and Methodologies for Performing Systems Analysis